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IS 10974-2 (1984): Code for hygienic conditions for production, transport, storage and distribution of indigenous milk products, Part 2: DAHI [FAD 15: Food Hygiene, Safety Management and Other Systems]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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IS : 10974 ( Part 2 ) - 1984

*Indian Standard*

CODE FOR HYGIENIC CONDITIONS FOR  
PRODUCTION, TRANSPORT, STORAGE  
AND DISTRIBUTION OF  
INDIGENOUS MILK PRODUCTS

PART 2 DAHI

UDC 637.1/.3:004.3/.4 : 613.6



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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## CODE FOR HYGIENIC CONDITIONS FOR PRODUCTION, TRANSPORT, STORAGE AND DISTRIBUTION OF INDIGENOUS MILK PRODUCTS

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( *Continued on page 2* )

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(Continued from page 1 )

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( Continued on page 10 )

## *Indian Standard*

# CODE FOR HYGIENIC CONDITIONS FOR PRODUCTION, TRANSPORT, STORAGE AND DISTRIBUTION OF INDIGENOUS MILK PRODUCTS

### PART 2 *DAHI*

## 0. FOREWORD

**0.1** This Indian Standard ( Part 2 ) was adopted by the Indian Standards Institution on 5 March 1984, after the draft finalized by the Food Hygiene Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Indigenous milk products, such as *KHOA*, *KHOA* based sweets, *DAHI*, *CHHANA* and *RASOGOLLA* are produced in large quantities in India. It has been often observed that proper hygienic conditions are not maintained in production, transport, storage and distribution of these indigenous milk products and there is considerable scope for improving the hygienic conditions in these respects. Unless proper hygienic norms are adopted, the consumption of such indigenous milk products may be a potential health hazard to the consumer.

**0.3** As the process of production, handling, transport, storage and distribution of the various indigenous milk products differ widely, codes of hygienic conditions for different milk products are being published in parts. The Part 1 covers *KHOA* and *KHOA* based sweets, Part 3 covers *CHHANA* and *CHHANA* based sweetmeats, Part 4 covers *KULFI*, and Part 5 covers *SHRI KHAND*.

**0.4** *DAHI* is manufactured by lactic fermentation of milk by single or mixed strains of lactic acid bacteria or by lactic fermentation accompanied by alcoholic fermentation by yeast. In India, production and consumption of *DAHI*, throughout the season is very common. Since the product contains most of the essential nutrients of milk, it provides an ideal medium for contamination with bacteria. It is, therefore, felt necessary to take adequate precautions, to protect the product from all sources of contamination during production, storage and distribution. This standard provides guidelines for maintaining optimum hygienic conditions in production, storage and distribution of *DAHI*.

**0.5** It is expected that this standard would be of considerable assistance to local health authorities in enforcing proper hygienic conditions in the interest of public health.

**0.6** This code is subjected to the provisions of the *Prevention of Food Adulteration Act*, 1954 and rules framed thereunder as amended from time to time and other local regulations.

**0.7** While preparing this standard considerable assistance has been derived from the National Dairy Research Institute, Karnal.

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## **1. SCOPE**

**1.1** This code ( Part 2 ) specifies the hygienic conditions and hygienic practices required to be adopted in the manufacture, packaging, storage, distribution and sale of *DAHI*.

## **2. DAHI MANUFACTURING PLANT**

### **2.1 Premises**

**2.1.1** *DAHI* should not be manufactured or stored in any open shed or in an unenclosed place.

**2.1.2** The building in which *DAHI* is manufactured should be of permanent nature and should be located in a clean and healthful locality far away from cattle sheds, open sewage drains or other places likely to breed flies and mosquitoes.

**2.1.3** Separate rooms of sufficient size should be provided for maintenance of starter cultures, manufacture and storage of *DAHI*, washing and sterilization of containers and utensils and storage of raw materials and other requisites.

**2.1.4** The room used for culture maintenance shall be fitted with germicidal lamp, gas burners and other facilities required in a bacteriological laboratory for handling pure cultures.

**2.1.5** The floors of the rooms shall be constructed of concrete or other equally impervious and easily washable materials. The floor shall be smooth, suitably sloped for drainage of water and provided with trapped drains [ IS : 651-1980\* or IS : 771 ( Part 1 ) - 1971† ].

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\*Specification for salt glazed stone ware pipes and fittings ( *fourth revision* ).

†Specification for glazed fire-clay sanitary appliances: Part 1 General requirements ( *second revision* ).



**2.1.6** The manufacturing unit shall be adequately lighted and ventilated keeping in mind the number of workers, their working hours, their hours of work and nature of operation. Ventilation and lighting shall also be in accordance with the *Factories Act, 1948*, amended up to date. For guidance for proper lighting [ see IS : 3646 ( Part 2 ) - 1966\*]. Proper ventilation is essential to prevent condensation and drippage. Exhaust fans shall be provided where necessary.

**2.1.7** The manufacturing room shall be made fly-proof, rodent-proof and bird-proof and should be provided with self-closing double doors. The doors and windows should be covered with fly-proof wire-mesh, and they should open outwards.

**2.1.8** The rooms and the area surrounding the factory building should be kept clean and dust free.

**2.2 Water Supply** — See IS : 4251-1967†.

**2.3** The effluents shall be disposed in a manner which is not detrimental to the hygienic conditions in the *DAHI* manufacturing unit and its surroundings. The effluents shall not be let off on road or in the open outside the dairy premises.

#### **2.4 Equipment**

**2.4.1** The *DAHI* factory shall use standard and approved types of equipment for receiving and storing raw milk, reconstituting dry milk powders, pasteurization of raw milk, heat treatment of milk for preparing bulk cultures and for carrying out fermentation and storage of *DAHI*.

**2.4.2** The equipment should be constructed and installed in such a manner as to facilitate efficient cleaning and sterilization and easy dismantling and assembling. The material used for the equipment should be resistant to corrosion or protected against corrosion.

**2.4.3** All materials used for construction of those surfaces of equipment which come into contact with the *DAHI* shall be non-toxic ( cadmium, lead, copper and its alloys shall not be used ). The use of galvanized sheets shall be minimum. All gasketing and packing materials shall be non-porous and non-absorbent.

**2.4.4** Surface coolers should be provided with metal shields for protection from aerial contamination. All vats and tanks should have proper covers.

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\*Code of practice for interior illumination: Part 2 Schedule for value of illumination and glare index.

†Quality tolerances for water for processed food industry.

## **IS : 10974 ( Part 2 ) - 1984**

**2.4.5** All piping used for conducting milk or reconstituted milk should be sanitary milk piping of a type which can easily be dismantled for cleaning and sterilization and should have smooth uncorroded surfaces ( see IS : 3382-1965\* ).

**2.4.6** All equipments should be installed, maintained and operated in accordance with public health regulations that may be prescribed.

### **2.5 Containers and Utensils**

**2.5.1** All multi-service containers and utensils used for handling milk, reconstituted milk and *DAHI* should be constructed of corrosion resistant material, should have no dents or open seams, should be cleaned and sanitized easily ( see IS : 5253-1969† ).

**2.5.2** Caps, single service containers and spoons used for *DAHI* should be purchased only from approved sources.

### **2.6 Cleaning and Sterilization of Equipment and Containers**

**2.6.1** Adequate facilities for the cleaning and sterilization of equipment and containers should be provided in a separate room including clean water, sinks, wash up tanks for holding detergent solutions, suitable containers for chemical sterilants, steaming chest or jets and arrangements for steam and hot water ( see IS : 5253-1969† ).

## **3. INGREDIENTS USED IN PREPARATION OF *DAHI***

**3.1** Milk used for manufacture of *DAHI* should be of good bacteriological quality. All milk and fluid milk products received at the factory should be pasteurized within one hour after receipt and cooled to a temperature of 5.0°C and maintained at that temperature until processed.

**3.2** Dry milk powder should be as fresh as possible and free from rancidity and off flavours.

**3.3** Standardization of milk for *DAHI* making should be done prior to pasteurization treatment.

**3.4** Standardized pasteurized milk should be cooled to the desired temperature of incubation and stored in a clean and sanitized covered vat until inoculated with starter organisms.

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\*Specification for stainless steel milk pipes and fittings.

†Guidelines for cleaning and sterilizing dairy equipment.

#### 4. PREPARATION OF STARTER CULTURE

4.1 Pure cultures of starters shall be obtained from an approved culture collection centre in the form of coagulated milk culture or as freeze-dried culture or dry powder culture. Such culture shall be used for preparation of intermediate and bulk cultures.

4.2 Transfer of cultures from the original stock to a larger volume of milk for propagation should be carried out under strict aseptic precautions in a room exclusively set apart for culture maintenance.

4.3 Intermediate and bulk cultures shall be prepared from fresh skim milk or freshly reconstituted skim milk which has been heat treated by free flowing steam for 30 minutes or to a minimum temperature of 80°C for 30 minutes and then cooled.

4.4 Milk processed as indicated above should be inoculated with pure culture of starter organisms ( single or mixed cultures ) and incubated at 25°C for 16 hours. During this period it should be protected from external contamination.

#### 5. ADDITION OF BULK CULTURE TO MILK

5.1 Desired volume of bulk culture ( 1 to 2 percent ) shall be transferred to pasteurized and tempered milk in the vat, observing all precautions to avoid external contamination during inoculation.

5.2 The vessels used for transferring the culture should be cleaned and sanitized prior to use by washing with a suitable sanitizer or by exposing the vessels to flowing steam ( see IS : 5253-1969\* ).

5.3 The strainer used for breaking the clumps of *DAHI* culture should be cleaned and sanitized prior to use.

5.4 The plunger or stirrer used for mixing the milk and the starter shall be cleaned and sanitized prior to use.

#### 6. CONTAINERS USED FOR FILLING INOCULATED MILK

6.1 *DAHI* bottles or containers used for filling up of the inoculated milk should be cleaned and sterilized. Similar treatment should be given to dispensers also.

6.2 Automatic bottle fillers used for filling inoculated milk shall be cleaned and sanitized by free flowing steam prior to use ( see IS : 5253-1969\* )

6.3 Bottles or containers in which inoculated milk has been filled shall be covered with suitable lids immediately after filling.

\*Guidelines for cleaning and sterilizing dairy equipment.

**6.4** Milk mixed with the starter organisms shall on no account be exposed to external contamination.

**6.5** Bottles and containers filled with inoculated milk and suitably covered with lids for preparation of *DAHI* shall be incubated for 16 hours at 25°C in an incubator.

**6.6** *DAHI* prepared as above shall be stored at a temperature of 4.5°C until distributed to consumers.

## **7. OVERFLOW AND SPILLAGE**

**7.1** Product drip or overflow or spilled milk culture or *DAHI* shall be discarded.

## **8. RETURNED *DAHI***

**8.1** *DAHI*, which has been returned in broken and open containers after distribution shall be discarded.

## **9. TRANSPORT AND DISTRIBUTION OF *DAHI***

**9.1** All vehicles used for the transportation of *DAHI* should be so constructed and operated as to protect their contents from exposure to extraneous contamination.

**9.2** No other material should be loaded on the same vehicle in which *DAHI* bottles or containers are transported.

**9.3** Suitable arrangements should be made to keep the *DAHI* in bulk containers or retail packings at 4.5°C until they are distributed. All precautions should be taken to prevent contamination of the contents during distribution.

## **10. ITINERANT VENDORS**

**10.1** Plants or factories manufacturing *DAHI* should engage only licensed vendors and hawkers for selling their product in the market or in public places.

**10.2** The vendors should be allowed to transport and sell *DAHI* only in factory-packed containers.

## **11. STORAGE AND SALE OF *DAHI* IN RESTAURANTS AND CATERING ESTABLISHMENTS**

**11.1** Restaurants, catering establishments, *HALWAIS*, sweetmeat shops and other selling outlets, which store and sell *DAHI* in retail to customers must be fully licensed for the purpose and fulfil all the hygienic requirements prescribed by the appropriate authorities in respect of public catering places.

**11.2** The floor and drains of the premises and every bench counter, stall or other place where *DAHI* is stored or handled for sale should be washed and cleaned everyday using an odourless bactericidal solution such as quaternary ammonium compound. There should be sufficient amount of clean water and detergents for cleaning of utensils and arrangements for toilet and washing of hands and for disposal of waste and used cups and spoons.

**11.3** Adequate cold storage facilities shall be provided at all distribution points.

**11.4** As far as possible, *DAHI* should be sold in their original factory filled containers. If *DAHI* is stored in bulk and portions removed for filling into cups to be served to customers, all precautions should be taken to prevent extraneous contamination of the product.

## **12. HYGIENIC PRACTICES**

**12.1** The manufacturing factory or plant shall be so located that no sanitary conveniences should either be within or communicate directly with the factory/plant.

**12.2** The walls, ceilings, flooring, etc, of the factory and the stall shall be kept in proper state of repairs, and painted and cleaned regularly.

**12.3** The factory and stall shall not be used as a living place.

**12.4** Refuse or liquid waste shall not be deposited or allowed to be accumulated in the premises.

**12.5** No person should touch *DAHI* with his hands during filling into cups and when subsequently serving to the customers.

**12.6** *DAHI* cups and spoons and other single service containers used for dispensing *DAHI* should be kept, in a clean container. Single service containers should not be re-used for refilling *DAHI*.

**12.7** Glass cups and other multi-service containers should be cleaned and sanitized effectively before use.

**12.8** *DAHI* scoops or other appliances used for dispensing *DAHI* into cups should be kept immersed in bactericidal solution or periodically rinsed in hot water maintained at a temperature of at least 80°C.

## **13. EMPLOYEE HYGIENE**

**13.1** Employee hygiene should be as given in IS : 10974 (Part 1) - 1984\*.

\*Code for hygienic conditions for production, transport, storage and distribution of indigenous milk products: Part 1 *KHOA* and *KHOA* based sweets.

( Continued from page 2 )

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